

S/N 10/602,323

PATENT

*FWB*

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant:	Kie Y. Ahn et al.	Examiner:	Fernando L Toledo
Serial No.:	10/602,323	Group Art Unit:	2823
Filed:	June 24, 2003	Docket:	1303.101US1
Title:	LANTHANIDE OXIDE / HAFNIUM OXIDE DIELECTRIC LAYERS		



**SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

MS Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the enclosed materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Supplemental Information Disclosure Statement be entered and the documents listed on the attached Form 1449 be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the 1449 form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. §1.97(c)(2), Applicants have included the fee of \$180.00 as set forth in 37 C.F.R. §1.17(p). Please charge any additional fees or credit any overpayment to Deposit Account No. 19-0743.

09/12/2005 MAHMED1 00000110 190743 10602323

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The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Pursuant to 37 C.F.R. 1.98(a)(2), Applicant believes that copies of cited U.S. Patents and Published Applications are no longer required to be provided to the Office. Notification of this change was provided in the United States Patent and Trademark Office OG Notices dated October 12, 2004. Thus, Applicant has not included copies of any US Patents or Published Applications cited with this submission. Should the Office require copies to be provided, Applicant respectfully requests that notice of such requirement be directed to Applicant's below-signed representative. Applicant acknowledges the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. 1.98(a)(2).

Respectfully submitted,

KIE Y. AHN ET AL.

By their Representatives,

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(612) 371-2157

Date 6 September 2005 By David R. Cochran  
David R. Cochran  
Reg. No. 46,632

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 6 day of September, 2005.

KACIA LEE  
Name

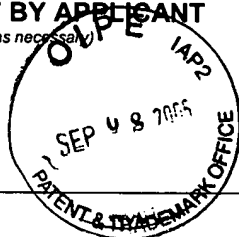
Kacia Lee  
Signature

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)



Complete if Known

Application Number	10/602,323
Filing Date	June 24, 2003
First Named Inventor	Ahn, Kie
Group Art Unit	2823
Examiner Name	Toledo, Fernando

Sheet 1 of 3

Attorney Docket No: 1303.101US1

**US PATENT DOCUMENTS**

Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document	Filing Date If Appropriate
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EXAMINER

DATE CONSIDERED

Substitute Disclosure Statement Form (PTO-1449)

\* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

Substitute for form 1449A/PTO <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (Use as many sheets as necessary)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;"><i>Complete if Known</i></td> </tr> <tr> <td style="width: 50%;"><b>Application Number</b></td> <td>10/602,323</td> </tr> <tr> <td><b>Filing Date</b></td> <td>June 24, 2003</td> </tr> <tr> <td><b>First Named Inventor</b></td> <td>Ahn, Kie</td> </tr> <tr> <td><b>Group Art Unit</b></td> <td>2823</td> </tr> <tr> <td><b>Examiner Name</b></td> <td>Toledo, Fernando</td> </tr> </table>	<i>Complete if Known</i>		<b>Application Number</b>	10/602,323	<b>Filing Date</b>	June 24, 2003	<b>First Named Inventor</b>	Ahn, Kie	<b>Group Art Unit</b>	2823	<b>Examiner Name</b>	Toledo, Fernando
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<b>Examiner Name</b>	Toledo, Fernando												
Sheet 2 of 3	<b>Attorney Docket No: 1303.101US1</b>												

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FOREIGN PATENT DOCUMENTS				
Examiner Initials*	Foreign Document No	Publication Date	Name of Patentee or Applicant of cited Document	T <sup>2</sup>

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		AHN, KIE Y., et al., "ALD OF AMORPHOUS LANTHANIDE DOPED TIOX FILMS", <u>U.S. Application Serial No. 11/092,072; filed March 29, 2005</u>	
		AHN, KIE Y., et al., "ATOMIC LAYER DEPOSITED HAFNIUM TANTALUM OXIDE DIELECTRICS", <u>U.S. Application Serial No. 11/029,757; filed January 5, 2005</u>	
		AHN, KIE Y., et al., "ATOMIC LAYER DEPOSITED LANTHANUM ALUMINUM OXIDE DIELECTRIC LAYER", <u>U.S. Application Serial No. 10/930,167; filed August 31, 2004</u>	

EXAMINER

DATE CONSIDERED

Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

<b>Application Number</b>	10/602,323
<b>Filing Date</b>	June 24, 2003
<b>First Named Inventor</b>	Ahn, Kie
<b>Group Art Unit</b>	2823
<b>Examiner Name</b>	Toledo, Fernando

Sheet 3 of 3

Attorney Docket No: 1303.101US1

**OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		AHN, KIE Y., et al., "ATOMIC LAYER DEPOSITED LANTHANUM HAFNIUM OXIDE DIELECTRICS", <u>U.S. Application Serial No. 11/010,529; filed December 13, 2004</u>	
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		AHN, KIE Y., et al., "RUTHENIUM GATE FOR A LANTHANIDE OXIDE DIELECTRIC LAYER", <u>U.S. Application Serial No. 10/926,812; filed August 26, 2004</u>	
		WILK, G. D., et al., "High-K gate dielectrics: Current status and materials properties considerations", <u>Journal of Applied Physics, 89(10), (May 2001), 5243-5275</u>	

**EXAMINER****DATE CONSIDERED**

Substitute Disclosure Statement Form (PTO-1449)

\* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional) <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached

**S/N 10/602,323**

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Kie Y. Ahn et al.

Examiner: Fernando L. Toledo

Serial No.: 10/602,323

Group Art Unit: 2823

Filed: June 24, 2003

Docket: 1303.101US1

Title: LANTHANIDE OXIDE / HAFNIUM OXIDE DIELECTRIC LAYERS

**COMMUNICATION CONCERNING RELATED APPLICATION(S)**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Applicants would like to bring to the Examiner's attention the following related application(s) in the above-identified patent application:

<u>Serial/Patent No.</u>	<u>Filing Date/Issue Date</u>	<u>Attorney Docket</u>	<u>Title</u>
	August 29, 2005	1303.048US2	SYSTEMS AND APPARATUS FOR ATOMIC-LAYER DEPOSITION
11/092072	March 29, 2005	1303.135US1	ALD OF AMORPHOUS LANTHANIDE DOPED TIOX FILMS
11/093104	March 29, 2005	1303.136US1	ATOMIC LAYER DEPOSITED TITANIUM SILICON OXIDE FILMS
11/117121	April 28, 2005	1303.138US1	ATOMIC LAYER DEPOSITED ZIRCONIUM SILICON OXIDE FILMS
11/117125	April 28, 2005	1303.139US1	ATOMIC LAYER DEPOSITION OF A RUTHENIUM LAYER TO A LANTHANIDE OXIDE DIELECTRIC LAYER
11/084968	March 21, 2005	1303.083US2	Zr-Sn-Ti-O FILMS
11/148505	June 9, 2005	1303.061US2	ATOMIC LAYER DEPOSITED NANOLAMINATES OF HfO2/ZrO2 FILMS AS GATE DIELECTRICS
11/178914	July 11, 2005	1303.061US3	NANOLAMINATES OF HAFNIUM OXIDE AND ZIRCONIUM OXIDE
11/189075	July 25, 2005	1303.148US1	MAGNESIUM TITANIUM OXIDE FILMS
	August 29, 2005	1303.121US2	RUTHENIUM GATE FOR A LANTHANIDE OXIDE DIELECTRIC LAYER
	August 26, 2005	1303.090US2	ATOMIC LAYER DEPOSITED DIELECTRIC LAYERS

COMMUNICATION CONCERNING RELATED APPLICATIONS

Serial Number: 10/602,323

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Page 2

Dkt: 1303.101US1

	August 26, 2005	1303.097US2	ATOMIC LAYER DEPOSITED ZIRCONIUM TITANIUM OXIDE FILMS
11/204745	August 16, 2005	1303.044US3	EVAPORATION OF Y-Si-O FILMS FOR MEDIUM-k DIELECTRICS
	August 29, 2005	1303.082US3	ATOMIC LAYER DEPOSITED Zr-Sn-Ti- O FILMS USING TiH4

Continuations and divisionals may be later filed on the cases listed above, or cited to the Examiner in any previous Communication Concerning Related Applications. Applicants request that the Examiner review all continuations and divisionals of the above-listed or previously-cited patent applications before allowing the claims of the present patent application.

Respectfully submitted,

KIE Y. AHN ET AL.

By Applicants' Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.  
P.O. Box 2938  
Minneapolis, MN 55402  
(612) 371-2157

Date 6 September 2005 By David R. Cochran  
David R. Cochran  
Reg. No. 46,632

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 6 day of September, 2005.

Name KACIA LEE

Signature Kacia Lee